CLAIMS

1. Thermal ink jet printhead (40) comprising a reservoir (103) suitable for containing ink, a die (61), a slot (102) etched in said die (61) and in fluid communication with said reservoir (103), and a plurality of ejectors (73), each of which in turn comprises a nozzle (56) and a chamber (74) having a bottom (67),
characterized in that each of said chambers (74) is fluidly connected with said slot (102) through a plurality of elementary ducts (72) having at least a portion not co-planar with said bottom (67).
2. Printhead according to claim 1, **characterized in that** said chamber (74) is bounded on the perimeter by a continuous wall (68).
3. Printhead according to claim 1, **characterized in that** it also comprises a basin (76) adjacent to said slot (102) and that each of said chambers (74) is fluidly connected with said basin (76) through said plurality of elementary ducts (72).
4. Printhead according to claim 1, **characterized in that** each of said elementary ducts (72) has a substantially rectangular section.
5. Printhead according to claim 4, **characterized in that** said substantially rectangular section has a first depth (f) and a width (g), and that said width (g) is between 3 and 15 μm.
6. Printhead according to claim 1, **characterized in that** each of said chambers (74) comprises a tank (63) fluidly connected with said plurality of elementary ducts (72).
7. Printhead according to claim 1, **characterized in that** said chamber (74) has a second depth (d) independent of said first depth (f).
8. Printhead according to claim 5, **characterized in that** said first depth (f) is between 10 and 100 μm.
9. Printhead according to claim 2, **characterized in that** said basin (76) has a third depth (c) different from said first depth (f).
10. Printhead according to claim 9, **characterized in that** said third depth (c) is between 20 and 100 μm.
11. Printhead according to claim 9, **characterized in that** said first depth (f) is between 5 and 20 μm.
12. Printhead according to claim 1, **characterized in that** said die (61) is substituted by a die (183) without slot, and a plurality of chambers (74'') is

located along at least one side of said die (183) and that each of said chambers (74'') is fluidly connected with said reservoir (103) through a plurality of elementary ducts (72'').

13. Printhead according to claim 1, **characterized in that a plurality** of nozzles (56') is contained in a flat cable (130) having an upper face (113) and a lower face (114), and that a plurality of elementary ducts (72') is produced on said lower face (114) of said flat cable (130).

14. Printhead according to claim 13, **characterized in that a plurality** of chambers (74') is produced on said lower face (114) of said flat cable (130).

15. Printhead according to claim 12, **characterized in that a plurality** of nozzles (56'') is contained in a flat cable (180) having an upper face (115) and a lower face (116), and that a plurality of elementary ducts (72'') is produced on said lower face (116) of said flat cable (180).

16. Printhead according to claim 15, **characterized in that a plurality** of chambers (74'') is produced on said lower face (116) of said flat cable (180).

17. Method for manufacturing a thermal ink jet printhead (40) comprising a reservoir (103) suitable for containing ink, a die (61), a slot (102) etched into said die (61) and a plurality of ejectors (73), each of which in turn comprises a chamber (74), a resistor (27) and a nozzle (56),

characterized in that it comprises the steps of:

- (205) etching a plurality of elementary ducts (72), a tank (63) and a basin (76) fluidly connected with said slot (102);
- (213) covering said plurality of elementary ducts (72) and said tank (63) by means of a layer (107); and
- (214) producing in said layer (107) said chamber (74), fluidly connected with said plurality of elementary ducts (72) and with said tank (63).

18. Method according to claim 17, **characterized in that** it also comprises the step of:

- (211) effecting a further etching of the basin (76).

19. Thermal ink jet printhead (40) comprising a reservoir (103) containing ink (142), a die (61), a slot (102) etched in said die (61) and fluidly connected with said reservoir (103), and a plurality of ejectors (73) each of which in turn comprises a nozzle (56) having an outer edge (66), and a chamber (74), said

ink (142) forming a meniscus (54) on said outer edge (66), and each of said ejectors (73) presenting a time constant τ,

characterized in that each of said chambers (74) is fluidly connected with said slot (102) through a plurality of elementary ducts (72) each having width *g* determined by means of the formula

$$g = \sqrt{12 * \upsilon * \tau}$$

where ν is the viscosity of the ink and τ is the time constant assigned to each of said ejectors (73), and the number N of said elementary ducts (72) is determined by means of the formula

$$N = (R')^2 * \frac{C_m}{4L'}$$

where R' and L' represent respectively the hydraulic resistance and the hydraulic inertance of a single elementary duct (72), and C_m represents the hydraulic compliance of said meniscus (54), whereby said meniscus (54) presents a critical damping with whatever value is assigned to τ.

20. Printhead according to claim 19 **characterized in that** said chamber (74) comprises a bottom (67), and that said elementary ducts (72) are fluidly connected with said chamber (74) through said bottom (67).

21. Printhead according to claim 19, **characterized in that** each of said elementary ducts (72) has a substantially rectangular section.

22. Printhead according to claim 21, **characterized in that** said substantially rectangular section has a depth (f) and a width (g), and that said width (g) is between 3 and 15 μm.

23. Printhead according to claim 19, **characterized in that** each of said chambers (74) comprises a tank (63) fluidly connected with said plurality of elementary ducts (72).

24. Printhead according to claim 22, **characterized in that** said depth (f) is between 5 and 100 μm.